

Delayed Incubation Period Among Eggs of *Oxya chinensis* (Thun.) (Orthoptera)

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Hibernation in the egg stage in Acrididae of temperate zones is generally assumed to be caused primarily by low winter temperatures. This tendency is so marked that with some species eggs laid in the autumn and held indoors at warm temperatures undergo the same retarded development prevailing under outdoor conditions. However, with some tropical or semitropical species it has been shown that hibernation in the egg stage may be induced by drought in regions having long dry periods at more or less regular intervals.

In view of the above it is of interest to give some cases of delayed incubation in the eggs of the Chinese grasshopper *Oxya chinensis* (Thun.) where neither low temperatures nor drought were operative during the entire period of incubation.

In the course of breeding the egg parasites *Scelio serdangensis* Timb. and *S. pembertonii* Timb. of this grasshopper in Malaya during 1930 and in Honolulu in 1931, thousands of *Oxya* eggs were held in glass tubes for many months. In order to secure exact life cycle data on the parasites, the various lots of *Oxya* egg pods were kept segregated and the emergence of both parasites and hoppers tabulated. The greater proportion of unparasitized eggs produced hoppers in about 6 weeks both in Malaya and Honolulu. Swezey* originally records the incubation period in Hawaii as 6 weeks. This may be taken as the normal duration of the egg stage. The following exceptions to the average of approximately 42 days, obtained in the handling of many thousands of eggs, which were kept constantly over wet cotton in glass containers at normal Honolulu and Malayan temperatures, represent extremes in our data, and though of rare occurrence, have been of sufficient frequency in both localities to be recorded as a definite life habit for this species.

* Hawaiian Planters' Record, vol. XXX, no. 3, p. 381, July, 1926.

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AT SERDANG, FEDERATED MALAY STATES

Eggs deposited	Eggs hatched	No. hatching	No. days
Sept. 18, 1930	Jan. 11, 1931	11	114
Sept. 18, 1930	Jan. 16, 1931	6	119
Oct. 1, 1930	Feb. 25, 1931	13	147
Oct. 1, 1930	Feb. 26, 1931	14	148
Oct. 1, 1930	Feb. 27, 1931	3	149
Oct. 1, 1930	Feb. 28, 1931	7	150
Oct. 1, 1930	Mar. 1, 1931	1	151
Nov. 18, 1930	Mar. 31, 1931	1	132
Nov. 23, 1930	Mar. 30, 1931	1	126

AT HONOLULU, HAWAII

Eggs deposited	Eggs hatched	No. hatching	No. days
Aug. 1, 1931	Nov. 18, 1931	2	108
Sept. 2, 1931	Jan. 9, 1932	16	128
Sept. 2, 1931	Jan. 12, 1932	3	131
Sept. 2, 1931	Jan. 17, 1932	1	136
Sept. 21, 1931	June 26, 1932	1	277
Sept. 24, 1931	Jan. 22, 1932	8	119
Sept. 24, 1931	Jan. 24, 1932	5	121
Oct. 9, 1931	Jan. 6, 1932	17	88
Oct. 9, 1931	Jan. 11, 1932	13	93
Oct. 11, 1931	June 9, 1932	10	240